

ABSTRACT

A method of formulating and fabricating a mask pattern and resulting mask for forming isolated or closely spaced contact holes in an integrated circuit.

The mask has a transparent mask substrate and patterned regions of attenuating phase shift material and opaque, partially transmissive or transparent material arranged to reduce the effect of side lobes and improve depth of focus. The rims, frames and outrigger patterns for the attenuating phase shift material and opaque, partially transmissive or transparent material are determined according to calculations performed on a processor with imaging software for various optical conditions and exposed feature criteria.

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